

### Remarks (Amended Claims)

In view of the following remarks and the foregoing amendments, reconsideration and allowance are respectfully requested.

Claims 1-15 were pending at mailing of this office action, with claim 1 being independent. Claims 1-7, 9-11 and 15-16 are currently amended and claims 8 and 12-14 have been cancelled, with claims 1 and 16 being independent.

Claims 17-30 have been added, with claims 16 and 29 being independent.

Claims 1-15 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Claims 1-15 stand rejected under 35 U.S.C. 112, second paragraph, as failing to comply with the distinct requirement.

Claims 1-15 stand rejected under 35 U.S.C. 101, as failing to comply with the statutory requirement.

Claims 1-15 stand rejected under 35 U.S.C. 103(a), as failing to be patentable over Kasper et al.

### 35 U.S.C. 112 – Claims 1-15

Independent claims 1 and 16 amended from claim 1 are patentable at least because this claim has been amended to contain subject matter described in the specification to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention at the time the application filed. In particular, the language “for forward signal propagation and for feedback signal propagation” and “finite response (FIR) filter” have been removed. Claim 1 has been amended for an IIR filter only. Claim 16 has been amended for a FIR filter only. Claims 1 and 16 have been amended to comply with the written description requirement under 35 U.S.C. 112, first paragraph and for complying not to be indefinite under 35 U.S.C. 112, second paragraph. Hence, claims 1 and 16 is patentable for at least having a written description that contains subject matter described in such a way to reasonably convey to one skilled in the art that the inventor had possession of the claimed invention at the time the application was filed. Applicant asks that the rejection to claim 1 and their dependencies claims be withdrawn, and these claims be placed in condition for allowance.

Claims 2 is patentable at least because claim 2 have been amended from claim 2

supported by Figs. 3, 5, 6a and 6b and associated written detailed descriptions to comply with the written description requirement under 35 U.S.C. 112, first paragraph. Hence, Applicant asks that the amended claim 2 be allowed

Claim 3 is patentable at least because claim 3 supported by written detailed description of the "transmission delay line" in the specification and by Fig. 12 has been amended to comply with the not indefinite requirement under 35 U.S.C. 112, second paragraph. In particular, the language "other know transmission line types" and "can be" have been removed for claim 3. Hence, Applicant asks that the amended claim 3 be allowed.

Claims 4-5 are patentable at least because claims 4 and 5 has been amended to comply with the written description requirement under 35 U.S.C. 112, first paragraph. In particular, the language "can be" has been removed for claims 4-5. Hence, Applicant asks that the amended claims 4-5 be allowed.

Claims 6-7 are patentable at least because claims 6-7 has been amended to have a clear antecedent basis for "transconductance element". Hence, Applicant asks that the amended claims 6-7 be allowed.

Claim 9 is patentable at least because claim 9 supported by the originally filed specification (*see, e.g.* last two paragraphs of detailed description of Fig. 2) has been amended to comply with the written description requirement under 35 U.S.C. 112, first paragraph. Hence, Applicant asks that the amended claim 9 be allowed.

Claims 10 is patentable at least because claim 10 supported by written description in the originally filed specification (*see, e.g.* the last 2 and 3 paragraphs in Fig. 2 description "...coefficient taps can be controlled..... The values of Gm can be fixed, programmable, or adaptively controlled.") and Fig. 11, has been amended to comply with the written description requirement under 35 U.S.C. 112, first paragraph. Hence, Applicant asks that the amended claim 10 be allowed.

Claims 11 is patentable at least because claim 11 supported by originally filed specification (*see, e.g.* paragraph 2 of the last section before claims "These include additional components added to the inputs of the transconductance amplifiers.") has been amended to comply with the written description requirement under 35 U.S.C. 112, first paragraph. Hence, Applicant asks that the amended claim 11 be allowed.

Claim 15 is patentable at least because claim 15 has be amended to comply with the

written description requirement under 35 U.S.C. 112, second paragraph. In particular, the language “finite impulse response (FIR) filter” and “feedforward equalization (FFE) filter” have been removed from these claims. Hence, Applicant asks that the amended claims 15 be allowed.

Claims 17-20 are patentable at least because claims 18-19 supported by the originally filed specification (*see, e.g.* the last 2 and 3 paragraphs in Fig. 2 description “...coefficient taps can be controlled..... The values of Gm can be fixed, programmable, or adaptively controlled.”) and Figs. 6a, 6b, 10, 11 has be added. Hence, Applicant asks that the amended claims 17-20 be placed under condition to be allowed.

Claim 21 is patentable at least because claims 20 is supported by written description of by an IIR function in the originally filed specification (*see, e.g.*, original Fig. 2 and description “transconductor element 13 connected directly to input signal X2”).

Claim 22 is patentable at least because claims 21 is supported the originally filed specification (*see, e.g.*, paragraph 2 of the summary section “This easily includes ranges up to and exceeding 100 GHz.”).

Claims 23-30 are added to have a clear statutory basis for claim 1 and its dependent claims.

### 35 U.S.C. 101 – Claims 1-15

Claims 1-15, amended as claims 1-7, 9-11 and 15-16, and new claims 17-30, are patentable at least because these claims have been amended or added to have a clear statutory basis for the claim 1’s IIR filter and claim 16’s FIR filter. The amended drawings 1-14 and amended detailed descriptions of these drawings provide details of at least one practical application. In particular, new claim 23 includes a transconductance circuit supported by Figs. 6a, 10 and 11; new claims 24-26 show a filter tuned by a switching serial connected resistors supported by Fig. 6a; new claims 27-28 are from a disclosure of a one-tap filter circuit supported by Fig. 13 and new claims 29 and 30 supported by Fig. 14 is a practical application of the invention to a backplane system.

Applicant believes that no new matter has been included in the amended claims 1-7, 9-11, 15-16 and new claims 17-30.

Hence, Applicant asks that amended claims 1-7, 9-11, 15-16 and new claims 17-30 be allowed.

Applicant believes that no new search is necessitated by the Claims amendments because the amendments are not necessary to distinguish the claims from prior art. Accordingly, Applicant respectfully requests that the claims amendments be entered.

35 U.S.C. 103(a)-Claims 1-15

Amended claims 1-7, 9-11, 15-16 and new claims 17-30, are patentable at least because the distinct differences between the disclosure in this application from Kasper et al.'s U.S. Patent No. 5,055,795 titled "Traveling Wave Type Transversal Equalizer" pointed out in the following:

The disclosure as described in the specification and in the drawings, the disclosed analog filter uses one transmission delay line (or a pair of transmission delay lines for a differential input signal) for a FIR filter and an additional transmission delay line to enable the feedback of the output signal into the filter structure for an IIR filter.

Further the disclosed analog filter sums converted currents from input signal and delayed input signals to perform the filter functions by tunable transconductance elements before converting back by a transimpedance amplifier.

1. Kasper et al.'s patent needs to have two delay lines for an equalizer, one at the input of the traveling wave amplifier and one at the output of the traveling wave amplifier. It is well known in the art that traveling wave amplifiers require two transmission delay lines in order to provide distributed amplification and time synchronization between input and output signals of the traveling wave amplifier. This disclosure does not require the two input and output transmission delay lines as in the traveling wave amplifier and this disclosure does not require any time synchronization of input and output signals of the traveling wave amplifier.
2. Kasper et al.'s patent only has a forward propagation structure without any capability for a feedback of the output signal, thus can not provide any IIR filtering capability as described in this invention..
3. Kasper et al.'s patent does not include voltage-current-voltage conversions using transconductance or transimpedance amplifiers.
4. Kasper et al.'s patent does not sum currents at a summing node.

Hence, Applicant asks that amended Claims 1-7, 9-11, 15-16 and new claims 17-30 be

allowed.

Priority to Provisional Application

This application claims the benefit of priority from U.S. Provisional Application entitled  
“Continuous-Time Multi-Gigahertz Filter Using Transmission Line Delay Elements”  
Application No. 60/460,679 filed on April 4, 2003.

Conclusion ( Amended Claims)

In view of the amendments and remarks herein, the Applicant believes that claims 1-7, 9-11, 15-16 and 17-30 are in condition for allowance and asks that these pending claims be allowed. The foregoing comments made with respect to the positions taken by the Examiner are not to be construed as acquiescence with other positions of the Examiner that have not been explicitly contested. Accordingly, the arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claims or other claims.

The fee in the amount of \$ 156 in payment for the excess claim fees (\$ 156 ) paid by enclosed check.


Respectfully submitted,

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